```
 SSSSSS  MM  MM  UU  UU  GGGGGG        BBBBB   YY  YY  TTTTTT  EEEEEE  SSSSSS
 SS      MMMMMM  UU  UU  GG            BB  BB   YYYY     TT    EE      SS
 SSSSSS  MM  MM  UU  UU  GG  GG        BBBBB     YY      TT    EEEEE   SSSSSS
     SS  MM  MM  UU  UU  GG  GG        BB  BB    YY      TT    EE          SS
 SSSSSS  MM  MM  UUUUUU  GGGGGG        BBBBB     YY      TT    EEEEEE  SSSSSS
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High Tech Without Knowledge

The changes that the implementation of the PC have brought about in the past decade is in itself a minor revolution. Looking back to the year 1980, noone could foresee the inpact of the past 13 years. Each of us in the industrial marketplace has his/her own computer that is more powerful than most mainframes of 1980. We all somehow learned how to type, or at least some form of the Columbus method better known as hunt and peck, if we didn't know how before so that most of us now no longer need a secretary. Using a Word Processor isn't too bad as most now have spelling checkers. What shows up is our lack of knowledge of grammer. Most of us now have to improve our grammer as the number of misused words and awkward sentence structures have sprung up like weeds (especially in National trade magazines where people such as writers and editors, who make their living by the word, should know better.) Or is it too much to expect a college graduate to know how to write a complete sentence in his mother tongue? There is no excuse for the associate degree people as well--if you want to be professional you must act professional. It's very sad and bad to here words like "gonna", "gotta", "wanna" etc. spoken on the air (either radio or TV) but to see them in print without it being dialoque for a play, is inexcusable. Truthfully speaking, the high water mark of good English usage was in the reign of Queen Elizabeth I. Shakesphere was living then.

There are other abuses of high technology. With the use of spreadsheets we abuse statistics more than we use them. Assumptions of life and death proportions are made on a few measurements that really have no statistical significance. Most of these programs have a way to check for an adequate amount of data but the person operating the program is so inexperienced with statistical methods that he/she doesn't even know how to do the check.

The latest fad seems to be graphs. Fads have the habit of either "rapidly fading away never to be remembered" or "linger like the stench of a dead woodchuck under the porch". Graphs belong to the "woodcheck" class. Graphs proliferate like butterflies on a warm summer's day. It has become easy to plot our data that we can do it with a few keystrokes. The graphs look beautiful but don't prove much most of the time. I guess because we have collected all this data we feel that we have a moral obligation to somehow use it.

Using insufficient data to discover trends or creat a model are even worse. Taking one personal case I had, it was a case of selecting the data correctly. I'm in Quality Assurance and as such keep track of all my company's sub-par work. The different rejects are all listed and the inspector is supposed to select one of the listed ones. It so happened that 2 different reject reasons were competing for a single cause. One week the inspector would favor reason #1. Two weeks later reason #2 would be fovored. Plotting reason #1 vs. reason #2 to find a corelation showed none. Adding them together however showed more or less a steady rate of reject. What was once random fluctuation in alternate reasons was really human bias. The important part of all this is that since we now have all these powerful tools at our disposal we also must use them correctly or they will lead us astray--down the wrong path. Figures don't lie but liers can figure. What my simple graphs did prove is that every 4th week, at the end of each accounting period, the number of total rejects always dropped as management overrulled inspection to send sub-par work to our customers. Of course, management didn't want to hear about this but once you point it out to them it keeps staring them in the face every time they see the graph. You save a little face by not having to point it out to them all the time. America's quality used to be the best that was available, not just enough to get by.

These are the perils of simple statistics, modeling usually makes even more assumptions and thus has even more pitfalls. Amature modelers aren't the

only ones. The pet theory of cosmologists, the Big Bang, which is trying to explain the creation of the universe, has to follow Einstein's theory of relativity and have nothing ever move faster than light, has a phase in it called "inflation" when this speed is violated. Through the years the Big Bang has been revised so often to account for new data that one hardly recognizes the original. It now needs umpteen curled up dimesnions to explain everything. The latest fad is black holes which are now proliferating worse than mosquitos on a warm moist summer evening--every galaxy seems to have one at its center. The problem with a black hole is that it has infinate density. Black holes have no radius, only an event horizion. In mathematics, infinity and zero are ill defined points to be avoided, yet this theory hunts for them and calls them singularities.

The Big Bang has other shortcomings as well. It relies totally on gravity and ignores electromagnetism (41 orders of magnitude more powerful but can be masked) which are the two forces that act at a distance. It hasn't as yet explained how a star aquires planets. At this writing, the sun is the only known star to have planets. Models are supposed to fit the data and not be merely "beautiful equat- ions". A word to the wise should be sufficient --get educated or stay away.

Another area of lack of sufficient knowledge is in computer programming. This one sometimes raises its ugly head in what should be professionally written programs--how about MS-DOS6 for the IBM compatible machines? Some claim the only part that seems to work correctly is "Uninstall"! I don't blame anyone for not learning how to program in assembly language for every computer they have owned. Changing computers every 3 or 4 years makes one feel all the effort to learn assembly hardly worth all the time it takes. There is now a better way--a sufficiently high enough and sophisticated enough language for most anyone called "C". Each time you change computers all you have to do is recompile your old "C" programs on your new machine (if it can read the disk format). Like Basic, there will be additions to "C" that will make it even more powerful. The latest edition of QBasic for the IBM clone is not a beginners language anymore. Teachers of QBasic must be very selective in what they present to starting programing students or the student will become lost. One cannot learn it on your own without at least the aid of a training manual as you don't know what to skip as too complex and not that necessary the first time around. The experienced programmer will appreciate some of the bells and whistles although some of the techniques are not truly Basic but smack of "C" or Pascal. However, since "C" seems to really be catching on as a subsitute to assembly because of its portability, it is worth the time and effort to learn as it will last you through several generations of computers.

Several months ago we discussed the Upgrade Ratrace. How many more upgrads are there going to be before they top out? The "486" may be the last of the line unless you are into a lot of networking. You won't need the "586"--it will be called that no matter what Intel tries to name it, with 64 bit processing. After all, you really don't need 32 bit processing either. That is, unless you are a real "snob". This doesn't mean not upgrading your hard disk drive, monitor and other peripherials or adding other things.

Learn your "C" now before it gets too complex. There are already several upgrads out there. The best way is still to take a course through your user group if they offer it. I do not recommend learning "C" before first becoming proficient with Basic. I mean proficient! If you havn't programmed in Basic in a while, you are no longer proficient. You have to know the programming techniques of Basic first. Maybe somewhere in the 60's or 70's when we were busy trying to earn a living, we lost sight of what it takes to be or remain a perfectionist in what we were doing. There is a lot of technology out there and being master of just some of it is a major undertaking. The computer has brought it all under our fingertips but we have to be careful not to misuse it.

2068 Code Bytes #3
by Lloyd Dreger

We continue our discussion of interrupt driven routines with BLINK which alternates two different User Defined Graphic characters to the screen.

We need a few more variables, namely:
TIME--to count down the 1/60th of seconds before the next change.
WHICH--Character 1 or 2 presently on screen.
CHAR1--Which UDG number (from 0 to 20, not the Basic #).
ATTR1--Attribute of ink/paper for character1.
CHAR2--2ND UDG charcter #.
ATTR2--2ND attribute.
POSY and POSX--BASIC Type AT 0 to 20 and 0 to 31.
ATTRA--Address of attribute.

We enter these at the start of the program together with the variables for the music program and put the Blink part in front of the Tune part which we did in our first 2 parts. We again have a new ORG and DISP which will leave our assembled coade at 28000.

```
ORG EQU 64817
DISP EQU 28714
TVFLAG EQU 23612
64817 TIME1 DEFB 20
64818 WHICH DEFB 1
64819 CHAR1 DEFB 0
64820 ATTR1 DEFB 0
64821 CHAR2 DEFB 0
64822 ATTR2 DEFB 0
64823 POSY DEFB 0
64824 POSX DEFB 0
64825 ATTRA DEFW 0,0
 And Previously:
64827 SOUNDF DEFB 1
64828 TUNE DEFB 1
64829 FINE DEFB 0
64830 COARSE DEFB 0
64831 TIME DEFB 0
64832 NEXT DEFW 0,0
We call this address:
64834 245    BLINK PUSH AF
64835 229          PUSH HL
64836 197          PUSH BC
64837 213          PUSH DE
64838 8            EX AF,AF'
64839 217          EXX
64840 245          PUSH AF
64841 229          PUSH HL
64842 197          PUSH BC
64843 213          PUSH DE
WE HAVE SAVED ALL VARIABLES
NOW FORCE USE OF TOP SCREEN
64844 58,60,92     LD A,(TVFLAG)
64847 245          PUSH AF
64848 203,135      RES 0,A
64850 50,60,92     LD (TVFLAG),A
64853 33,49,253    LD HL,TIME1
64856 53           DEC (HL)
IF NOT ZERO NOT YET TIME TO CHANGE
64857 32,46        JR NZ,PLAY
RESET THE BLINK CLOCK
64859 54,20        LD (HL),20
64861 35           INC HL   TO WHICH
64862 62,2         LD A,2
64864 190          CP (HL)
IS WHICH =2ND CHAR?
64865 32,3         JR NZ,BK1
64867 53           DEC (HL) SET TO 1
64868 24,3         JR BK2
64870 52       BK1 INC (HL) SET TO 2
64871 35           INC HL--CHAR1
64872 35           INC HL--ATTR1
64873 35       BK2 INC HL--CHAR2/CHAR1
64874 126          LD A,(HL)
64875 254,0        CP 0-- IF TRUE,
BLINK NOT BEING USED
64877 40,26        JR Z,PLAY
64879 229          PUSH HL
64880 245          PUSH AF
The easiest way to print a characher is to do a basic type AT using RST 16's with another RST 16 with A= character #. This calls basic routines, so make sure you save all registers you need before doing so.
USE POSX AND POSY TO DO AN AT
64881 62,22        LD A,22
64883 215          RST 16
64884 58,56,253    LD A,(POSX)
64887 215          RST 16
64888 58,55,253    LD A,(POSY)
64891 215          RST 16
64892 241          POP AF
64893 230,15       AND 15
64895 198,144      ADD A,144
A is now the Basic UDG character #
64897 215          RST 16
64898 225          POP HL
64899 35           INC HL--TO ATTR
64900 126          LD A,(HL)
64901 42,57,253    LD HL,(ATTRA)
64904 119          LD (HL),A
The character is printed with the attribute so we can exit by restoring the screen flag.
64905 241    PLAY  POP AF
64906 50,60,92     LD (TVFLAG),A
The interrupt routine continues with
```

the music which we discussed in previous installments. Remember to change your jump address at 65022. You also have to write a routine to enter all the Blink variables.

There are other ways of creating sounds without using the sound generator. One of these is the toggle of the border output--register 254. This is used in Beep. It is such a short routine it fits almost anywhere you want to put it and so is given without addressses.

```
243             BEEP  DI
```
Merely doing a DI does not turn off the sound of the sound generator unless you just happened to have hit a rest in the music.
```
175                   XOR A
1,254,0               LD BC,254
22,0                  LD D,0
203,231         B0    SET 4,A
237,121               OUT (C),A
16,254          B1    DJNZ B1
203,167               RES 4,A
237,121               OUT (C),A
16,254          B2    DJNZ B2
21                    DEC D
32,241                JR NZ,B0
251                   EI
201                   RET
```

War games require good shooting and bomb effects. In this routine the whistle and the bang produce a bomb effect. Just doing the bang is a good gun effect by itself.

The game uses a saved variable called EFFECT to toggle on and off the bomb or gun sounds. Again, the routine can go anywhere so we give it without addresses--the XXX being dependent upon where it is assembled.

```
58,xxx,xxx GUN LD A,(EFFECT)
254,0          CP 0
200            RET Z
197            PUSH BC
FIRST STOP THE MUSIC
205,53,255     CALL 65333 (STOP)
DO ONLY THE BOMB
58,XXX,XXX EXP LD HL,LIST+11
6,8            LD B,8
205,XXX,XXX E0 CALL INOUT2
16,251         DJNZ E0
6,120          LD B,120
118       EX1  HALT
16,253         DJNZ EX1
6,4            LD B,4
205,XXX,XXX BW CALL INOUT2
16,251         DJNZ BW
DONE, NOW RESTART MUSIC
205,1,255      CALL 65281 (SETUP)
193            POP BC
201            RET
58,XXX,XXX BOMB LD A,(EFFECT)
254,0          CP 0
200            RET Z
197            PUSH BC
TURN OFF MUSIC
205,53,255     CALL 65333 (STOP)
62,15    LOOP  LD A,15
33,XXX,XXX     LD HL,LIST
6,2            LD B,2
205,XXX,XXX BX CALL INOUT1
16,251         DJNZ BX
245            PUSH AF
126            LD A,(HL)
35             INC HL
211,245        OUT (245),A
241            POP AF
60             INC A
254,141        CP 141
IF DONE JUMP TO GUN
40,197         JR Z,EXP
245            PUSH AF
211,246        OUT (246),A
6,4            LD B,4
205,XXX,XXX B4 CALL INOUT2
241            POP AF
118            HALT
24,221         JR LOOP
245    INOUT1  PUSH AF
126            LD A,(HL)
35             INC HL
211,245        OUT (245),A
241            POP AF
211,246    X   OUT (246),A
201            RET
126    INOUT2  LD A,(HL)
35             INC HL
211,245        OUT (245),A
126            LD A,(HL)
35             INC HL
24,245         JR  X
      LIST DEFB 0,4,2,7,56,8,15,9,15,
        DEFB 10,15,0,1,6,6,7,7,8,16,9,
        DEFB 16,10,16,12,56,13,8,9,0,
        DEFB 10,0,12,0,13,0
```

This completes the sound and interrupt driven programs. Next time we will give you a general menu routine, one that can be used on any size up to a full screen with a cursur that jumps from top to bottom automatically.

```
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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+                 Defeat enemy when found.                                    +
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